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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,951	09/08/2006	Jun Cheng	L9289.06192	6878

52989 7590 04/14/2009

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EXAMINER
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DONADO, FRANK E

ART UNIT	PAPER NUMBER
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2617

MAIL DATE	DELIVERY MODE
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04/14/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/591,951	<b>Applicant(s)</b> CHENG ET AL.	
	<b>Examiner</b> FRANK DONADO	<b>Art Unit</b> 2617	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 December 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendment*

1. The amendment filed on 12/29/08 has been entered. No claims have been amended. No claims have been cancelled. No claims have been added. Claims 1-6 are currently pending in this application, with claims 1, 3 and 5 being independent.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Li, et al (**US PG Publication 20020119781**). From now on, Li, et al, will be referred to as Li.

Regarding claim 1, Li teaches a scheduling method for scheduling subcarriers in an uplink multicarrier signal which a base station apparatus allows a plurality of radio communication terminal apparatuses to use, the method comprising: a measurement step of measuring, per subcarrier, reception quality of an uplink multicarrier signal or a downlink multicarrier signal each radio communication terminal apparatus transmits or receives (**A scheduler, 1301 in Fig. 13, schedules for Signal-Plus-Interference-to-Noise-Ratio (SINR) measurements of all sub-carriers and their corresponding uplink and downlink signals for transmissions between base stations and radio**

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**communication terminals, where the term “cluster” indicates the existence of subcarriers and the use of a cellular system indicates communication from/to radio terminals, Paragraph 81, lines 1-12 and Paragraph 36, lines 1-4 and Paragraph 37, lines 1-5);** a calculation step of calculating average reception quality of each radio communication terminal apparatus (**Paragraph 41, lines 1-5**); a selection step of selecting the radio communication terminal apparatuses in ascending order of calculated average reception quality (**The SINR of each subcarrier may be ordered in any order desired for a downlink cluster allocation, through arbitrary cluster feedback according to priority desired, Paragraph 78, lines 10-14**); and an assignment step of assigning a subcarrier in the uplink multicarrier signal to the selected radio communication terminal apparatus in descending order of reception quality measured in the measurement step (**Paragraph 54, lines 1-3**).

Regarding claim 2, Li teaches the scheduling method according to claim 1, further comprising a determination step of determining a modulation scheme having the highest transmission rate and applicable to the subcarriers in the uplink multicarrier signal for each radio communication terminal apparatus based on the measurement result of reception quality in the measurement step (**Paragraph 26, lines 1-5**), wherein, in the assignment step, the subcarrier in the uplink multicarrier signal is assigned, in descending order of reception quality measured in the measurement step, to the radio communication terminal apparatuses selected in the selection step in accordance with transmission rate corresponding to the modulation scheme determined in the

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determination step until predetermined transmission rate scheduled for the radio transmission terminal apparatus is satisfied (**Paragraph 78, lines 10-17**).

Regarding claim 3, Li teaches a base station apparatus for performing radio communication with a plurality of radio communication terminal apparatuses (**Paragraph 7, lines 4-9**), the base station apparatus comprising: a reception section that receives an uplink multicarrier signal transmitted by each of the plurality of radio communication terminal apparatuses (**Paragraph 7, lines 4-9**); a measuring section that measures reception quality of the received uplink multicarrier signal per subcarrier (**Paragraph 27, lines 7-10**); a scheduler that calculates average reception quality of the uplink multicarrier signal transmitted by each radio communication terminal apparatus (**Paragraph 41, lines 1-5**), selects the radio communication terminal apparatuses in ascending order of average reception quality (**A scheduler, 1301 in Fig. 13, calculates SINR data on both the uplink and the downlink, and an SINR averaging takes place on uplink multicarrier signal in a subcarrier selection process, where the values may be ordered from smallest to largest, if desired, Paragraph 81, lines 1-5, Paragraph 61, lines 1-2, Paragraph 63 and Paragraph 41, lines 1-5**), and assigns a subcarrier in the uplink multicarrier signal to the selected radio communication terminal apparatus in descending order of reception quality measured in the measuring section (**Paragraph 54, lines 1-3**); and a transmission section that transmits a downlink multicarrier signal formed with the subcarriers assigned by the scheduler (**Paragraph 24, lines 1-6**).

Regarding claim 4, Li teaches the base station apparatus according to claim 3, wherein the scheduler comprises a determination section that determines a modulation scheme having the highest transmission rate and applicable to the subcarriers in the uplink multicarrier signal for each radio communication terminal apparatus based on the measurement result of reception quality of the uplink multicarrier signal per subcarrier by the measuring section (**Paragraph 26, lines 1-5**), calculates average reception quality of the uplink multicarrier signal each radio communication terminal apparatus transmits (**Paragraph 41, lines 1-5**), selects the radio communication terminal apparatus in ascending order of calculated reception quality (**An SINR averaging takes place on uplink multicarrier signal in a subcarrier selection process, where the values may be ordered from smallest to largest, if desired, Paragraph 61, lines 1-2, Paragraph 63 and Paragraph 41, lines 1-5**), and assigns the subcarrier in the uplink multicarrier signal to the selected radio communication terminal apparatus in descending order of reception quality measured in the measuring section (**Paragraph 54, lines 1-3**).

Regarding claim 5, Li teaches a base station apparatus for performing radio communication with a plurality of radio communication terminal apparatuses (**Paragraph 7, lines 4-9**), the base station apparatus comprising: a reception section that receives an uplink multicarrier signal containing control information whose content

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includes reception quality of a downlink multicarrier signal per subcarrier measured by each of the plurality of radio communication terminal apparatuses (**Paragraph 81, lines 1-5**); a scheduler that calculates average reception quality of the downlink multicarrier signal transmitted by each radio communication terminal apparatus, selects the radio communication terminal apparatuses in ascending order of average reception quality (**The SINR of each subcarrier may be ordered in any order desired for a downlink cluster allocation, through arbitrary cluster feedback according to priority desired, Paragraph 78, lines 10-14**), and assigns a subcarrier in the uplink multicarrier signal to the selected radio communication terminal apparatus in descending order of reception quality measured in the measuring section (**Paragraph 54, lines 1-3**); and a transmission section that transmits a downlink multicarrier signal formed with the subcarriers assigned by the scheduler (**Paragraph 24, lines 1-6**).

Regarding claim 6, Li teaches the base station apparatus according to claim 5, wherein: the scheduler comprises a determination section that determines a modulation

scheme having the highest transmission rate and applicable to the subcarriers in the uplink multicarrier signal for each radio communication terminal apparatus based on the control information (**Paragraph 26, lines 1-5**); and the scheduler calculates average reception quality of the downlink multicarrier signal each radio communication terminal apparatus receives (**A scheduler, 1301 in Fig. 13, calculates average SINR of the downlink, Paragraph 81, lines 1-12 and Paragraph 78, lines 10-11**), selects

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the radio communication terminal apparatus in ascending order of calculated reception quality (**The SINR of each subcarrier may be ordered in any order desired for a downlink cluster allocation, through arbitrary cluster feedback according to priority desired, Paragraph 78, lines 10-14**), and assigns the subcarrier in the uplink multicarrier signal to the selected radio communication terminal apparatus in descending order of reception quality measured in the measuring section in accordance with transmission rate corresponding to the modulation scheme determined in the determination section until predetermined transmission rate scheduled for the radio transmission terminal apparatus is satisfied (**A threshold may be selected as part of the process, where the assignment of the subcarrier in the uplink is made to the subscribers in descending order of average SINR, where the transmission rate corresponds to modulation rate until desired threshold is met, Paragraph 26, lines 1-8 and Paragraph 54, lines 1-3**).

### ***Response to Arguments***

4. Applicant's arguments regarding claims 1, 3 and 5, filed 12/29/08, have been fully considered but they are not persuasive for the following reasons:

Regarding Li not teaching assigning subcarriers in descending order of reception quality to radio communication terminals that have been selected in ascending order of reception quality, SINR and traffic load information is used by the base station to assign subcarriers to each subscriber, as stated in Paragraph 27, lines



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9-10 and Paragraph 28. Subcarriers are assigned according to order of reception quality, as stated in Paragraph 42, lines 7-10 and Paragraph 43. The base station selectively assigns subcarrier clusters to avoid interference among already assigned subcarriers, even where subcarriers have previously assigned according to highest reception quality, as indicated in Paragraphs 94-96.

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRANK DONADO whose telephone number is (571) 270-5361. The examiner can normally be reached Monday-Friday, 9:30 am-6 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rafael Perez-Gutierrez can be reached on 571-272-7915. The fax phone number for the organization where this application or proceeding is assigned is 571-270-6361.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-273-8300.

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